Industrial Development Planning for New and Renewable Energy

(1998—2015)

SETC

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Basic Principle for Planning Formulation

- Market-oriented
- mature technologies and products that own a certain scale of market and availability of profit
- Put forward rational development target and formulate market-based industrial policies
- Accelerate the industrialization and commercialization of new and renewable energy

Basis for Industrial Development----
Resources, Technology, and Market

- Considering reserve of resources, special technical level, and energy supply situation of local conventional market, so as to determine actual utilizable amount.
  - Rich resources
  - Having a technical basis for scale application
  - Huge development potential and good prospective for market

Resource situations

Type	Total Amount of reserve	Annual reserve	Annual exploited	Annual energy substitution (10^3tce)
Solar	5.02×10^{22}J ~$1.7*10^{12}$tce		Solar-PV13MW Water heater: $1500*10^8m^2$	7 1950
Wind	$32.26*10^8$kW	$2.53*10^8$kW	Generation:240MW	242
Geothermal	$2000*10^8$tce	Generation:5800 MW Low-temp: $31.6*10^8$tce	Generation:28MW Space heating: $800*10^4m^2$	65 186
Crop-straw	$7*10^8$t	$2.8\sim3.5*10^8$t	Traditional use: $2.8*10^8$tce Gasification: $0.7*10^8m^3$	21
Fuelwood		$1.58*10^8$t	$1.83*10^8$t	
Animal feces	$4.03*10^8$t, Dry material: $3700*10^8$	$676*10^4$tce $90*10^8m^3$(biogas)	$0.59*10^8m^3$	76
Industrial waste water	$222.5*10^8$t organic material: $500*10^8$t	$60*10^8m^3$(biogas)	$3.2*10^8m^3$	410

Products and Market

- Solar heater
- Solar-PV
- windfarm
- Stand-alone wind generation
- Geothermal power generation
- Geothermal space heating
- Large/middle scale biogas engineering (industrial waste water)
- Large/middle scale biogas engineering(agricultural wastes)
- Crop-straw gasifier

Industrial Development Target(I)

- Before 2005
  - Establish and improve supporting and service system for renewable energy industry, and normalize market
  - Set up economic incentive policies and mechanism
  - Share of renewable energy among national energy consumption: 0.7%（ 13Mtce ）

Industrial Development Target(II)

- 2005—2010
  - Form a whole system for renewable energy industrial development
  - Completely set up effective economic incentive policy system
  - Share of renewable energy among national energy consumption: 1.5%（ 30Mtce ）

Industrial Development Target(iii)

- 2010—2015
  - Carry out large-scale dissemination and application of renewable energy technologies, commercialize most of them
  - Form a complete system of renewable energy industry, and set up suited management system

Special targets for various sectors

- Improve the level of planning, construction, and management for windfarm, and realize domestic-making and industrialization of wind generation equipment
- promote production to be scalization,high-tech and high-grade so as to develop large-scale efficient solar collectors industry, and standard its market
- Greatly improve the scale and technical level of solar-PV production, and enhance R&D of components and system
- Improve design and automation control level for large/middle scale biogas engineering, establish the technical service system,and develop efficient biomas utilization equipment
- Keep the diffusion and dissemination of small wind turbine
- Positively utilize high-temperature geothermy for power generation to solve power-supply problem in remote areas, and greatly develop mid/low-temp. geothermy for heat supply and comprehensive utilization, and improve the level for geothermal equipment production

Estimated products development targets

Year	1998	2000	2005	2010
Solar PV (MW)	13	16	26	56
Solar water heater (10^4m^2)	1500	2600	7300	17100
Wind farm (MW)	223.6	500-600	1000-1500	3000
Stand-alone wind turbine (MW)	17	41.9	133.8	429.3
High-temperature goethermal generation (MW)	25	30	40—50	75—100
Middle/low geothermal space heating (10^4m^2)	800	950	1400—1500	2200—2500
Biogas from industrial biogas engineering(10^8m^2)	3.2	4.8	12.8	24.0
Biogas from agricultural waste biogas enginneering(10^8m^2)	0.6	0.6	1.2	2.8
Crop straw gasification gas supply (10^8m^2)	0.7	1.6	6.1	12.9

Construction of renewable energy industrial system

- Support a batch of important producer to form scale production and the capibility for self-developing new products
- Form and establish related suited system for industrial development and corresponding technical supporting and service system
- draw out new national norm systems, and set up national quality check and supervision centers
- Normalize market--issue certification and permission for some products

Barriers for industrial development

1. Technology
2. Fund
3. Market development
4. Economic incentive policy and measure
5. Renewable energy management system